



# **Coordinate Plotting and Linear Line Graphs: Capturing Creatures, Predicting Results!**

A Problem Solving/Data Analysis Unit for 5th Grade

For Bailey-Gatzert Elementary  
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Created by Nathan Wheeler

## **Rational**

Teaching line graphs and the subsequent interpretation of the data is a fundamental scientific and mathematic skill that allows students to make sense of the world around them. The skills and concepts involved will become a springboard to using their mathematical skills in new, practical ways. It is imperative that students understand the value of these skills and concepts and are actively engaged in the activities. With a proper understanding of plotting coordinates, drawing line graphs, and interpreting data, students will be well prepared for further studies in math and science that become a lot more intense as they pass into middle school.

## **Goals**

At the end of the unit, students will be able to a) create a graph with two linearly related variables, b) use data to plot coordinates on a graph, c) draw a linear line between coordinate points, d) make predictions about the data based on the graph. Students will also value the use of line graphs and their importance in further mathematical and scientific studies.

## **Learning Targets**

<b>Learning Target</b>	<b>EALRs/GLEs</b>
<ol style="list-style-type: none"> <li><b>1.</b> Students will be able to construct a linear line graph and make predictions about the data trends represented. (skills)</li> <li><b>2.</b> Students will understand that linear line graphs help us interpret data and make predictions. (concept)</li> <li><b>3.</b> Students will see the value in using linear line graphs to solve problems and make sense of data (depositional)</li> <li><b>4.</b> Students will demonstrate their understanding of ordered pairs and their relation using a linear rule. (Concept)</li> <li><b>5.</b> Students will know that a linear line graph is a graphic representation of related data points. (fact)</li> </ol>	<p><b>Math 5.4.D</b> Graph ordered pairs in the coordinate plane for two sets of data related by a linear rule and draw the line they determine.</p> <p><b>Math 5.5.C</b> Construct and interpret line graphs.</p>

## Pre-/Post Assessment

The pre-/post assessment that will be given during this unit is on pg. 15. The information collected from this data will help guide me as I move forward with the unit. Depending on the answers given, I may spend more or less time with conceptual and/or process-based skills. For example, if the students have very little awareness of the concept of a line graph, I will include more mini-lessons and another activity around lesson two that digs deeper into their use and why they are an important tool to use in making sense of the world around us.

## Essential Question

Can we predict specific data points using a line graph?

## Moral/Ethical Considerations

Interpreting and predicting data using line graphs is a fundamental skill needed to move forward in both math and science. The population I work with (low-SES, English language learners) have historically been under-represented in math and science related fields of study and careers. It is important for me to insure that the students have a full understanding of the concepts, skills, and facts related to interpreting data using graphical representations. More importantly, it is important that I focus on the dispositional learning target and introduce this unit in an engaging, familiar way that will build off of their background knowledge to increase the value of what I am teaching them and the practical nature of the concepts.

## Learners

Context for Learning	Adaptations/refinements for TLU
<b>Academic development:</b> Overall the students are lower than average when it comes to standardized testing. Many students are ELL and four have learning disabilities. The reading and writing skills in the class go from being at grade level to barely demonstrating 2nd grade skills.	I will need to focus on very targeted scaffolding in terms of vocabulary surrounding most every part of data collecting and line graphing, including: axis, data, variables, x axis, y axis, prediction, linear, and coordinate. Pre-assessment will be key to scaffolding this information so every student can succeed. With their being such a wide variety of needs in the class, the unit has already been planned to accommodate this range. The story approach (and Pokemon influence) have been used to engage students in this unit who are normally not engaged in

	math. Surveys I have given to the students as well as informal conversations have shown me that this is a topic that the students enjoy and will be engaged in.
<b>Academic language development:</b> With the vast number of ELL students (17) the academic language development is low.	I will need to focus on building vocabulary as discussions with my cooperating teacher has shown me that the academic language used in math is often difficult for the many ELL students in my class. I will need to prominently display a word bank on the wall where we will keep track of academic language used in the class as well as have assignments targeting this need. I will also add a quiz to the unit that focuses on the wordbank we will construct.
<b>Social and emotional development:</b> There are many students in the class who are struggling with their social and emotional needs. Overall this is lower than the average class.	Development social and emotional skills is an important focus in my classroom as many of the students struggle with issues related to the development of their social and emotional intelligence. It seems like often times these skills are ignored in Math units, but I think math is a perfect place to do it. I will be having a lot of sharing and working together in the unit in a way I hope facilitates students' social and emotional development. This focus can be seen in the sharing of their creatures (which students will have complete control in designing), the playing of the Battle Graphs game, and their group line graph brainstorming.
<b>Family / community / cultural assets:</b> A wide range of communities and cultures are represented in the class. There are virtually no middle class Caucasian students in the class. The community around the school is largely low-income and many recent immigrants from many different Asian and African countries.	With such a diverse class, I will provide points of reflection where students will write about how this connects to their own lives and cultures. I will be having a letter written home where students will reflect on their learning, as well as a letter written to fictitious "Professor McNew."

## Web Page

The website that supports this unit is located at: <http://line-graphing-creature-capture.wikispaces.com>. There is also print outs of the website on pg. 36.

## Family Activity

The students will be tasked with writing a letter home about what they have learned in the math unit, specifically answering a) what a linear line graph is, and b) how it can be used to interpret data and make predictions. The students will then ask a family member to play their coordinate plot game with them. They will return with the scores from the games and write a paragraph about the experience.

## Lessons

**Day One:** Introduction to Creature Capture line graph Unit

**Duration:** 100 minutes

**Resources and Materials needed:** Field books, writing utensils.

**Co-Teaching Strategy:** Team Teaching

Learning Targets	Unit Level Learning Target	Evidence of Achievement	State Standard
<p>1. Students will be able to define key terms about linear line graphs.</p> <p>2. The students will be able to identify key parts of a linear line graph.</p>	<p>2. Students will understand that linear line graphs help us interpret data and make predictions. (concept)</p> <p>5. Students will know that a linear line graph is a graphic representation of related data points. (fact)</p>	<p>1. Student will define axis, data, variables, x axis, y axis, prediction, linear, and coordinate</p> <p>2. Student will identify key parts of a line graph: x axis, ya axis, coordinate points, linear line.</p>	<p><b>Math 5.5.C</b> Construct and interpret line graphs.</p>

### Assessments

Page 6 “Vocabulary” (LT #1) and page 7 “Parts of a Line Graph” (LT #2) in their Field Guides (attached to the end of this document).

### Narrative Description

Students will first be given the pre-/post-assessment. The class will then be introduced to the Creature Capture unit. A short story about the Creature Capture world will then be read. The story will introduce the students to the character and conflicts. The students will be told how they are now tasked with capturing a creature of this world and training it for battle with the enemy. They will receive help from the mysterious Professor McNew, who says he has secret information about defeating the bad guy and they must learn how to make line graphs before he will give up more info. The class will then be shown the unit learning targets and how they will need to learn these skills and concepts to defeat the bad guy in the story. The students will then be given their field books (a workbook/journal) and they will “capture” (i.e. create) their own creatures that they will “train” throughout the unit. The creature will be drawn, named and placed in their field books.

Following the completion of their creature, the class will be given a mini-lesson about the new vocabulary they will encounter in the unit. They will also be shown a linear line graph and its various parts. To make this lesson more engaging, the students will break into groups and play a competitive vocabulary game where they will have to both define the words and then on a line graph projected on the board. The students will then update their field books with this information. In the field books there will be a vocabulary section and a worksheet about identifying various parts of a linear line graph.

**Day Two:** Using line graphs in many different situations

**Duration:** 50 minutes

**Resources and Materials needed:** Field books, writing utensils.

**Co-Teaching Strategy:** Team Teaching

Learning Targets	Unit Level Learning Target	Evidence of Achievement	State Standard
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<p><b>1.</b> Students will understand that line graphs can be used to understand a variety of situations.</p>	<p><b>2.</b> Students will understand that linear line graphs help us interpret data and make predictions. (concept)</p> <p><b>3.</b> Students will see the value in using linear line graphs to solve problems and make sense of data (depositional)</p> <p><b>5.</b> Students will know that a linear line graph is a graphic representation of related data points. (fact)</p>	<p><b>1.</b> Student will be able to identify at least three different scenarios in which a line graph would be useful for solving a problem.</p>	<p><b>Math 5.5.C</b> Construct and interpret line graphs.</p>
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### Assessments

Page 28 “Brainstorming Line Graphs” (LT #2) and page 29 “Line Graph Identification Game,” (LT #1, 2) in their field guides.

### Narrative Description

First, the students will watch a video of a compilation of various Mythbusters episodes where the hosts use line graphs to solve problems. The class will then discuss the various uses of line graphs. The class will discuss what a slight slope and a big slope indicate. Students will then brainstorm what various graphs might represent. An example: A steep slope may be a rocket’s height as tracked by minutes. A slight slope may be the growth of a redwood tree over a year. The students will then be given a worksheet asking them to match various graphs to likely situations and then come up with some of their own. Once students have completed the worksheet, they will be given an update on the creature capture world. The students will be told that Professor McNew has found out secret data about the enemy, but he first needs the students to prove their skills before he can release the data.

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**Day Three:** Plotting coordinates on a coordinate plane

**Duration:** 50 minutes

**Resources and Materials needed:** Field books, writing utensils, construction paper, markers, butcher paper.

**Co-Teaching Strategy:** Team Teaching

Learning Targets	Unit Level Learning Target	Evidence of Achievement	State Standard
1. Students will be able to plot coordinates on a coordinate plane.	<p>1. Students will be able to construct a linear line graph and make predictions about the data trends represented. (skills)</p> <p>4. Students will demonstrate their understanding of ordered pairs and their relation using a linear rule. (Concept)</p> <p>5. Students will know that a linear line graph is a graphic representation of related data points. (fact)</p>	<p>1. Student will construct their own coordinate.</p> <p>2. Students will accurately plot coordinates on a coordinate plane.</p>	<b>Math 5.4.D</b> Graph ordered pairs in the coordinate plane for two sets of data related by a linear rule and draw the line they determine.

### Assessments

Page 30 “Battle Graphs: Game Instructions” (LT #1) in their field guide.

Students will also construct their own coordinate plane game which will include a properly built coordinate plane with a labeled x and y axis. This game board will be graded with the rubric located on page 19 of the unit plan.

### Narrative Description

First, the class will be given a mini-lesson on plotting coordinates on a coordinate plane. The class will then be told that this is very similar to a game that is popular in the Creature Capture Wold called Battle Graphs (pseudo-Battleship). My master teacher and I will then demonstrate a round of this game using our own game boards. The class will then be shown how to build their



Battle Graphs game boards. Once the students have completed their boards they will play against each other.

The class will be given another update from Professor McNew, stating that he likes their progress, and will share with them that the enemy they face is a Minotaur. Students will be given a picture of the minotaur holding the golden stickers.

**Day Four:** Connecting our Coordinates with linear lines, creating rules and making predictions

**Duration:** 50 minutes

**Resources and Materials needed:** Field books, writing utensils.

**Co-Teaching Strategy:** Team Teaching

Learning Targets	Unit Level Learning Target	Evidence of Achievement	State Standard
<p>1. Students will be able to draw a linear line between data points.</p> <p>2. Students will be able to create rules based on a linear line graph.</p> <p>3. Students will be able to make predictions based on a rule.</p>	<p>1. Students will be able to construct a linear line graph and make predictions about the data trends represented. (skills)</p> <p>4. Students will demonstrate their understanding of ordered pairs and their relation using a linear rule. (Concept)</p>	<p>1. Student will draw a linear line between data points.</p> <p>2. Student will create a rule based on the line drawn between the data points.</p> <p>3. Student will make predictions about other values based on the rule.</p>	<p><b>Math 5.5.C</b> Construct and interpret line graphs.</p>

### Assessments

Page 31 “Investigating New Creatures” in the field guide.

### Narrative Description

First, the class will be given a mini-lesson on creating rules interpreting the lines drawn between linearly-related coordinate points. Students will be told that a bunch of data about some new creatures found in the creature capture world have come in and they need to analyze the data by creating rules from the little data we have been given. The students will then be asked various questions about the creatures and they will use their rules to make predictions

The students will then be told that they are finally ready for the last battle but they need to prove to Professor McNew that they have the skills he requires. To do this, they will write a letter to him, describing what they now know about line graphs, interpreting data and making predictions (they will be prompted to include vocabulary, reasons why graphing is important, and step by step how to create a line graph, apply data, and make predictions). They will be able to use their field guides to write the letter.

### **Day Five: The Final Battle**

**Duration:** 50 minutes

**Resources and Materials needed:** Field books, writing utensils.

**Co-Teaching Strategy:** Team Teaching

<b>Learning Targets</b>	<b>Unit Level Learning Target</b>	<b>Evidence of Achievement</b>	<b>State Standard</b>
1. The students will be able to compare two linear line graphs in order to make a prediction.	<p>1. Students will be able to construct a linear line graph and make predictions about the data trends represented. (skills)</p> <p>2. Students will understand that linear line graphs help us interpret data and make predictions. (concept)</p> <p>4. Students will demonstrate their understanding of ordered pairs and their relation using a linear rule. (Concept)</p> <p>5. Students will know that a linear line graph is a graphic representation of</p>	<p>1. Student will construct two line graphs and apply the given data.</p> <p>2. Student will compare the two graphs to make predictions about the subject from which the data was taken.</p>	<p><b>Math 5.4.D</b> Graph ordered pairs in the coordinate plane for two sets of data related by a linear rule and draw the line they determine.</p> <p><b>Math 5.5.C</b> Construct and interpret line graphs.</p>

	related data points. (fact)		
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### Assessments

Page 32 “The Final Battle” (LT #'s 1-5) and page 20 “Self-Assessment Rubric for Poster” (LT #'s 1-5) of the unit plan.

### Narrative Description

Students will finally be given the information from Professor McNew, stating the exact attack points and defense points of the Minotaur. The students will then need to create graphs based on their creature's individual leveling statistics. They will need a graph for strength leveling as well as defense. The students will need to decide what level their creature needs to be at to defeat the Minotaur, with the goal of having the lowest level possible. They will need to have both better attack and defense. Students will then share with the class the results of their work by creating a poster with their creature, the graphs, and at what level they defeated the Minotaur.

### Research and Theory

The lessons have been designed to incorporate many of the suggestions given by Marilyn Burn in her book *About Teaching Mathematics* (2007). In this book, she suggests sequencing a unit first by introducing the students the problem that they will be investigating. Next, she suggests allowing the students to explore the problem. Finally, she suggests a summarizing activity where students discuss their solutions and process. This sequence can be seen in my unit on the first day, where I introduce the main problem of the unit (the cliché story-based tension of defeating a bad guy) and then the way in which we will solve and investigate the problem (through linear line graphing). To explore the problem, students will be creating a creature and doing several activities that will help them develop the skills and conceptual knowledge necessary to solve the unit-level problem. Finally, students will summarize their learning through the final tasks of writing a letter about the skills and concepts and then creating a poster about their solution.

In the design of the lessons and activities in the unit, I have been informed by other research as well. The activities were all designed with Blooms' Taxonomy in mind (Atherton, 2005) with the goal of leading students from knowledge to synthesis. This can be seen in the base-level vocabulary questions up to the final summative poster project. Motivation techniques, as informed by *Psychology of Learning* (Snowman, 2009), were also used to develop the unit through engaging, problem-based tasks targeted to student interest in order to motivate them to complete assignments and reach the learning targets. Finally, Newmann's *Authentic Instruction and Assessment* was used to assist in the incorporation of prior-knowledge activities and elaborated communication techniques.

### **Language Demands**

There is a lot of academic language (oral and written) in this unit that will be very difficult for my students. Because of this need, I will be heavily focusing on building up their math and science vocabulary. This will be done through engaging group games (lesson one), the incorporation of vocabulary definitions into two creative projects (lesson three—Battle Graphs game board, lesson five—Final Battle Poster), and multiple points of written reflection where students can share their understanding of the vocabulary and the skills and concepts in the unit. To further accommodate the students, the words will always be clearly posted on the wall for them to see the definitions at all times.

### **How Unit Addresses Special Needs/Abilities**

- A variety of learning tasks are included which tap into multiple intelligences: writing (visual/kinesthetic), drawing (visual/kinesthetic), public speaking (auditory), number-based problem solving (logical-mathematical).
- Allows for differentiated instruction: personalized scaffolding, flexible means to reach defined ends, mine subject-area expertise, allows student differences to be assets (creating creature, playing graphing game).
- Inquiry Based Learning: student-centered investigations and problem-based learning is used throughout. Right from the beginning, students are immersed in a fantasy world with the stakes immediately told (training creature, defeating bad guy).
- Cooperative Learning: heterogeneous student groups will be used throughout to maximize the learning opportunities for every student.

- Problem tackling is a cooperative endeavor promoting the values of trust and respect for differences.

### **Assessments and Modifications**

Every lesson includes many points for informal and formal assessment that will show me the whole class and individual students' understanding of the learning targets. My assessments are done both through typical worksheet style problem solving and also through creative projects that focus on the students ability to articulate their conceptual understanding of the learning targets. My lessons have been designed to front-load their learning with vocabulary and conceptual understanding (Lesson two is a whole day of assessing the various uses of line graphs). I can break my assessments up into four categories: Vocabulary (do the students understand the language), conceptual (do the students understand the fundamental concepts involved in graphing and interpreting data), process (can the students construct a line graph, plot data points, and make a prediction) and accuracy (can the student solve problems with these skills). All of these categories are directly linked to my unit level learning targets.

There are two ELL students (I have many more, but two in particular are very new two the language) in my class that I will need to make modifications for. This will be done in several ways. First, I will place them with a group of high-level students who will assist them during the lessons. Second, I will give them modified worksheets (mainly in the field guide) with color coded areas, bigger font and underlined items to focus on. Third, I will give them sentence stems to write from when they have to write their letters and other reflections. They will also be given extra vocabulary support through a personal word bank book. Tutors from Seattle University that I have recruited will also work with these students one on one, targeting each category of assessment to insure their understanding of the unit level learning targets.

## **Annotated Resource Bibliography**

**Burns, M. (2007). *About Teaching Mathematics: A K-8 Resource*. Sausalito: Math Solutions**

This resource was used to inform the unit sequencing and the overall design of the lessons through a focus on introducing the problem, exploring, and summarizing solutions, procedures and thinking.

**Newmann, F. M, M. Bruce King, & Dana L. Carmichael. (2007) *Authentic Instruction and Assessment*. Iowa: Department of Education.**

This resource was used to inform the focus and content of our unit and lessons to best incorporate prior-knowledge, in-depth understandings and elaborated communication techniques. This can be seen in the discussions, lessons, and projects.

**Snowman, J., McCown, R., & Biehler, R., (2009). *Psychology Applied to Teaching*. 12th ed. Houghton Mifflin.**

This resource was used to inform the mini-lessons in the unit plan. Snowman, McCown and Biehler explain the importance of problematic knowledge in terms of in-depth student learning. Research shows that when lessons are problem-based, students are more motivated, engaged, and efficient learners.

**Atherton, J.S. (2005). *Learning and Teaching: Bloom's taxonomy*. New York: Allyn and Bacon.**

This resource was used to inform the tasks and projects by checking them against the various Bloom's levels to insure that we are reaching higher-level thinking that makes for a deeper and more authentic learning experience.

## Linear Line Graph Unit Pre-/Post-Assessment

Name\_\_\_\_\_ Date\_\_\_\_\_

1. What is a linear line graph?

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2. What kind of problems can a linear line graph help you solve?

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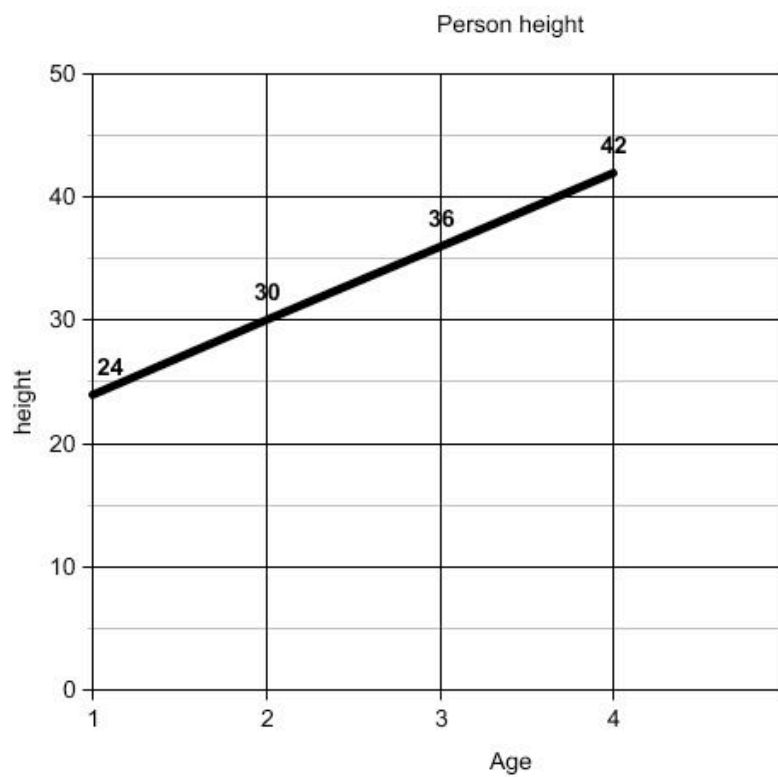
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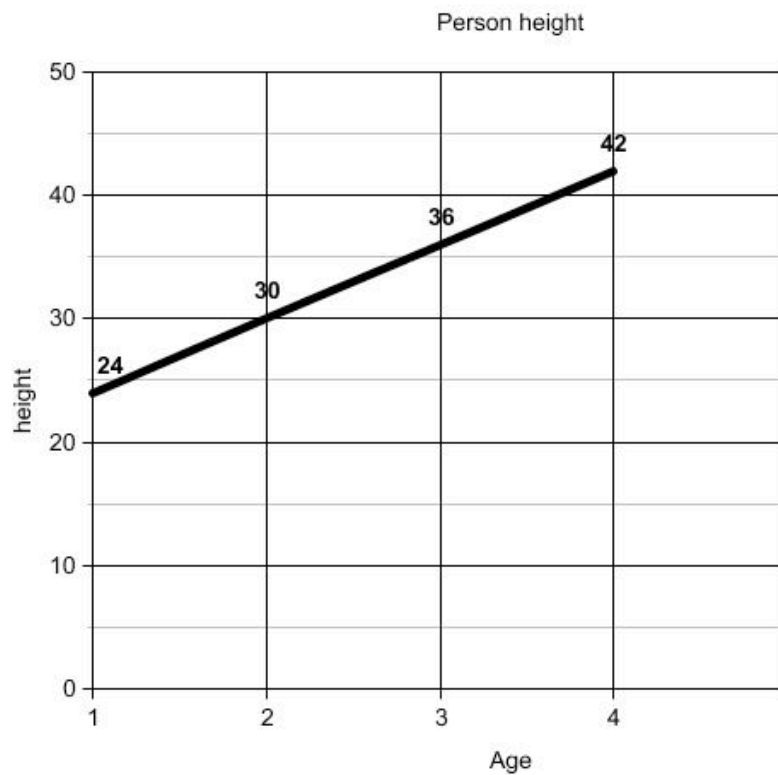
3. The line graph below shows a person's height in inches starting at age one. Given the data, can you predict what height the person will be at age 10?

Answer: \_\_\_\_\_ inches.



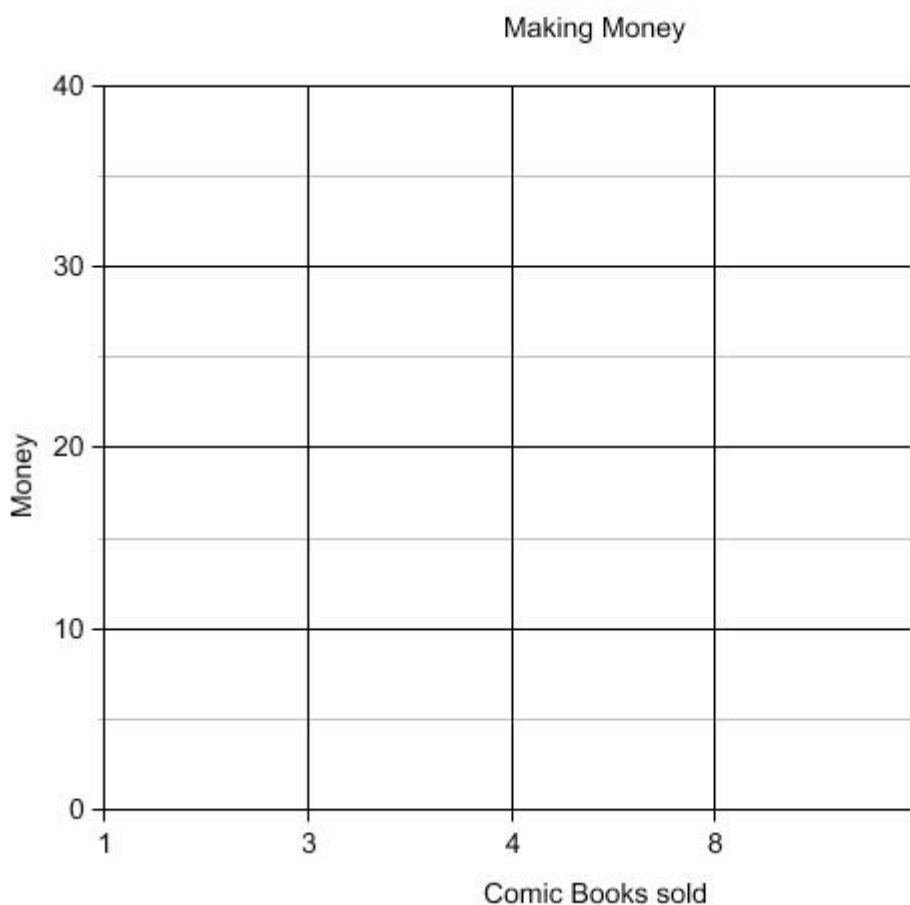


4. On the graph below, can you identify the x axis, y axis, linear line, coordinates, and indicated variables. Write the words next to where you see them on the graph.



5. A group of friends have decided to get rid of their comic book collection! They have already sold some and want to make a line graph to find out how much money they will make with when they sell more. Can you help them out by plotting these points on the graph below?

Data: When they sold 1 comic, they had a total of \$4. When they had sold 3 comics, they had a total of \$12. When they sold four comics, they had a total of \$16. And when they sold 8 comics, they had a total of \$32!



### Rubric for Battle Graphs Game Board

In the rubric below, the first column describes expectations for the assignment. The rating for this expectation is in the second column.

- 1 (missed the mark; needs lots of work)
- 2 (On target; met the basic requirements of the assignment)
- 3 (outstanding work; went beyond expectations)

In the last column is an explanation explicitly detailing why you received the rating.

Criteria for Assessment	Rating	Explanation of rating
Game board is excellently constructed with straight lines, a clean appearance, and easily playable graph.		
Coordinate plane is clearly labeled (X and Y Axis, unit notches 1-10) so players will not struggle to find the points.		
A vocabulary key is written on the side of the game board with accurate definitions and no spelling errors.		

### Self-Assessment Rubric for Final Battle Poster

Use the rubric below to evaluate your writing. The first column describes expectations for the assignment.

Rate yourself by putting a number in the second column.

- 1 (missed the mark; needs lots of work)
- 2 (On target; met the basic requirements of the assignment)
- 3 (outstanding work; went beyond expectations)

In the last column explain why you assigned that number for that particular criteria.

Criteria for Assessment	Rating	Explanation for Rating
Poster is excellently designed and shows clear effort through well-drawn images, graphs, and details about my creature		
Sentences and paragraphs are complete and well-constructed with no spelling or grammatical errors		
Two line graphs are present and clearly detailed with explanations of rules and predictions about the battle.		

A vocabulary list is included with clearly stated, accurate definitions.		
Line graphs are accurate with clear data points, a well-drawn linear line, and an accurate rule that correctly predicts the outcome of the battle.		

# Creature Capture

FIELD BOOK

EXPLORER \_\_\_\_\_ YEAR \_\_\_\_\_

## THE STORY OF CREATURE CAPTURE

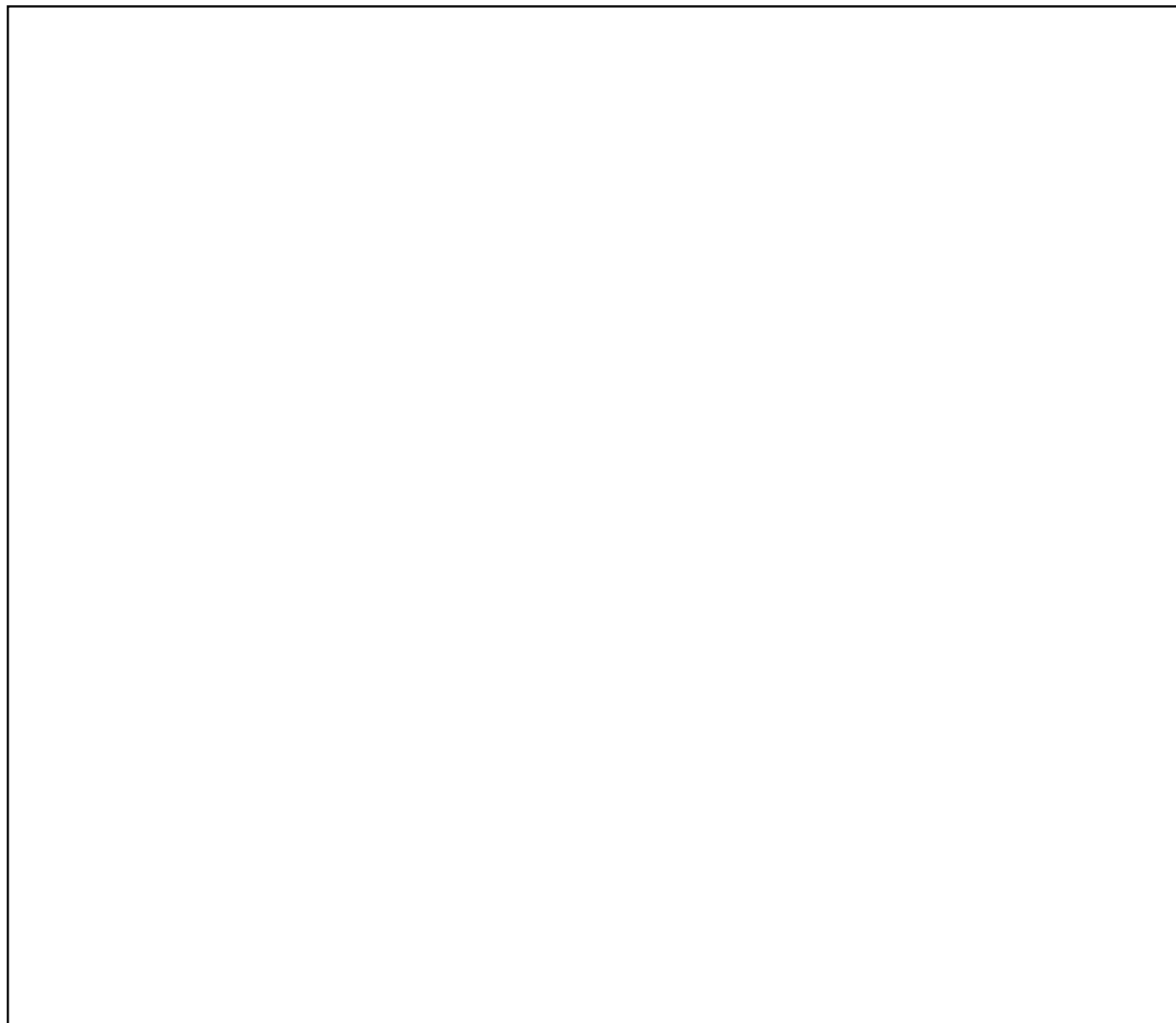
The Creature Capture World (CCW) is a wild, mysterious place full of monsters, beasts and trainable little animals that the people simply call "creatures." A rite of passage for every young person is to capture a creature with one of their special nets and train it to fight other creatures in friendly battles.

Every kid in CCW wants to win the special golden sticker, which is only given when you defeat the Master Battler in the Arena to the North. The Master Battler has been undefeated for decades and no one has been able to defeat his secret monster and get a golden sticker. A mysterious man named Professor McNew sees potential in the new 5<sup>th</sup> Grade students in CCW and reaches out to them, saying he knows the way to finally defeat the Master Battler.

ADVENTURE CHECKLIST

- ☐ Your Captured Creature
- ☐ Vocabulary
- ☐ Parts of a Line Graph
- ☐ Brainstorming line graph ideas
- ☐ Graph Identification Game!
- ☐ Battle Graphs: Game Instructions
- ☐ Investigating New Creatures
- ☐ Letter to Professor McNew
- ☐ The Final Battle



YOUR CAPTURED CREATURE

NAME OF CREATURE:

SPECIAL ATTACK:

## VOCABULARY

**Define the following terms:**

1. Predictions

2. Y Axis

3. X Axis

4. Variable

5. Data

6. Linear

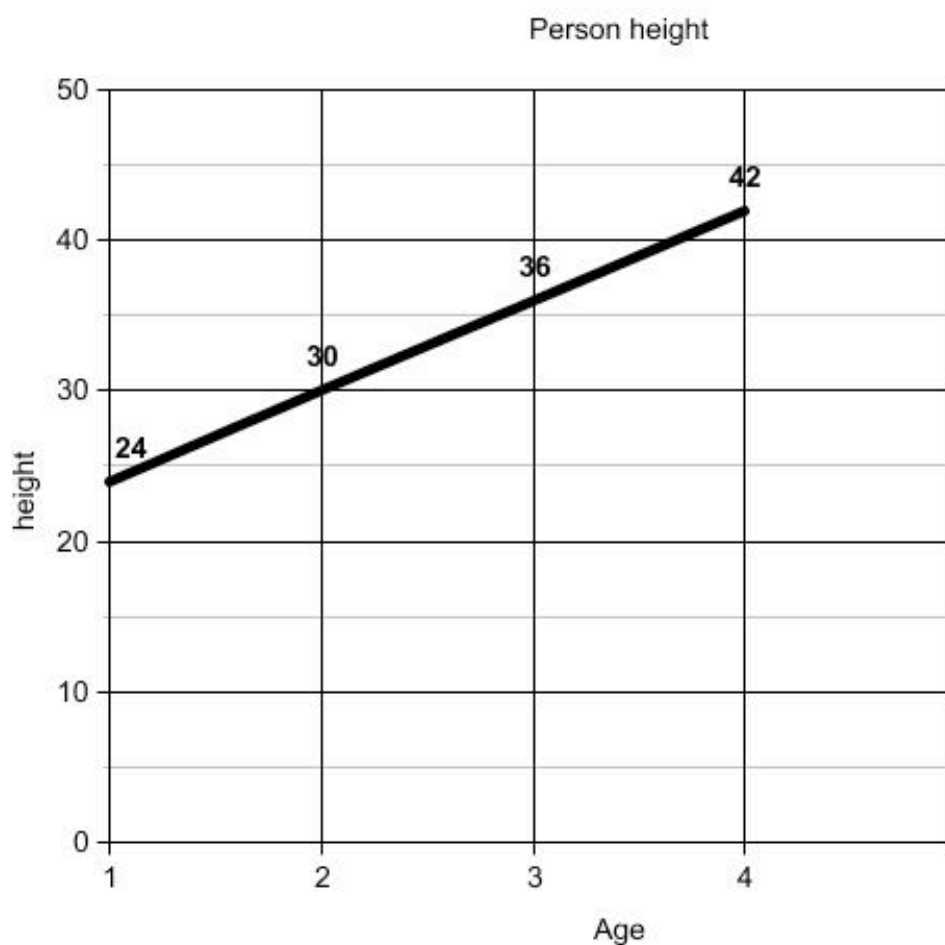
7. Coordinate

## PARTS OF A LINE GRAPH

Identify the various parts of the line graph below.

Draw arrows from the word to the parts of the graph they describe

VARIABLE-----COORDINATES-----Y AXIS-----X AXIS-----LINEAR LINE



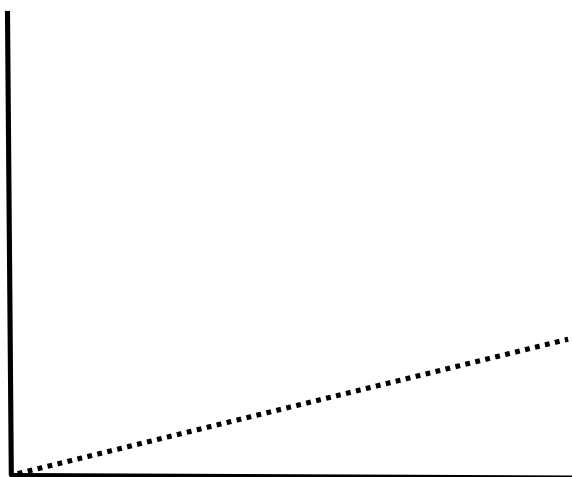
## BRAINSTORMING LINE GRAPH IDEAS

Describe at least three situations below where line graphs could be used to answer questions and/or solve problems.

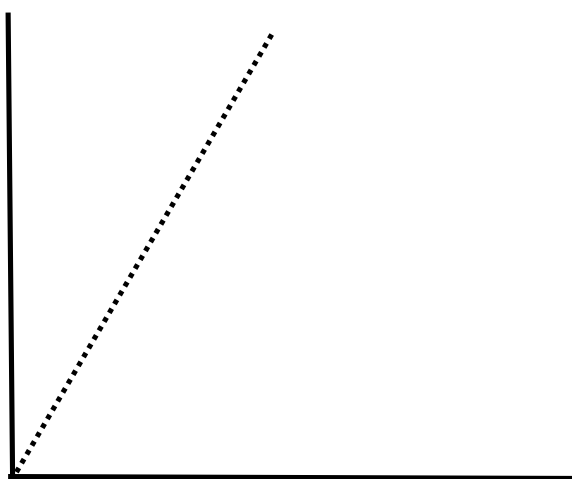
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## GRAPH IDENTIFICATION GAME!

1. What could the graph below represent? What are some ideas for the variables?



2. What could the next graph below represent? What are some ideas for the variables?



## BATTLE GRAPHS: GAME INSTRUCTIONS

Write the instructions and rules for the Battle Graph game so someone who has not played it will know everything about it after they read this!

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## INVESTIGATING NEW CREATURES

The new creature is a giant ill-tempered squirrel-like creature who has the following stats:

Attack: 54

Defense: 68

The squirrel's trainer says at level 1, the creature had 10 attack points. At level 3, it had 32 attack points. At level 5 (It's current level) it has 54 attack. For defense, the trainer says at level one it had 8 defense points. At level two it had 23 defense points. At level 5 it now has 68.

Now, create a rule for this data in the space below:

When the creature is at level 9, what will it's stats be?

Attack at level 9:

Defense at level 9:

The trainer says he wants even more information! What will the creatures stats be at level 26?

Attack at level 26:

Defense at level 26:

LETTER TO PROFESSOR MCNEW

Convince Professor McNew that you are ready for the final battle by telling him everything you know about the function of line graphs, how to plot coordinate points, and how to make predictions!

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

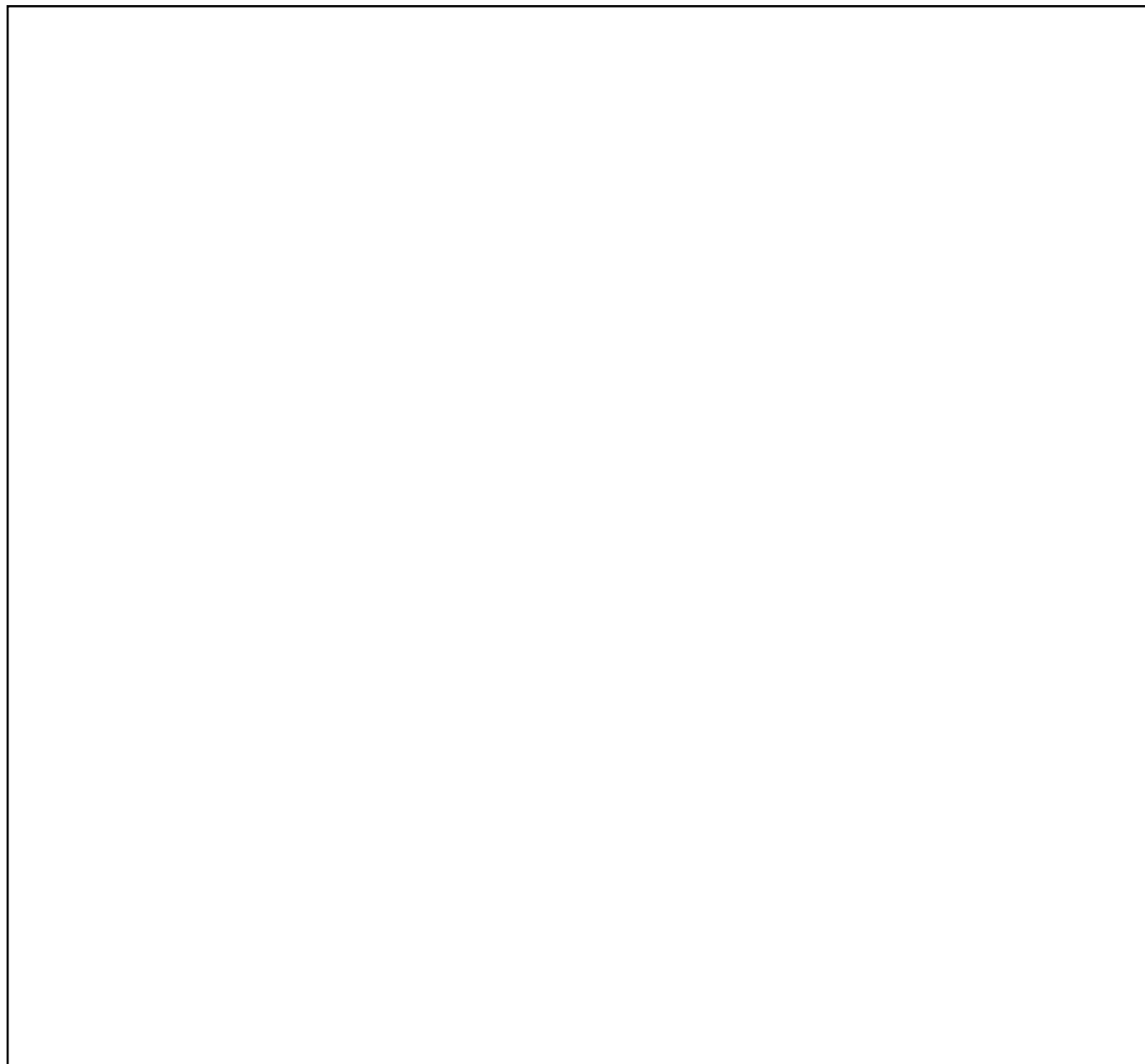


## THE FINAL BATTLE

Create your two graphs in the squares below. Have the first one be your attack data and the second one be for your defense. Include all relevant data (including a rate chart!).

GRAPH #1

## GRAPH #2



Now tell Professor McNew what level your Creature needs to be at to defeat the Minotaur!

Minotaur's stats: Attack—535, Defense—420

Your creature's current level and stats:

Level\_\_\_\_\_

Attack\_\_\_\_\_


Defense\_\_\_\_\_

Given the data on your graph, what level will your creature need to be at to defeat the Minotaur\_\_\_\_\_. (Remember, you must best both his attack and defense points!)

At this level, what will your stats be:

Attack\_\_\_\_\_


Defense\_\_\_\_\_



# Creature Capture! A 5th Grade Line Graphing Unit

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
## Creature Capture! A Line Graphing Unit for Mr. McNew's 5th grade class

In this exciting unit, students will adventure in the Creature Capture World, where they will create their own creatures and use their skills at graphing to defeat the Master Battler and earn the coveted Golden Stricker!

In this unit, students will understand the value of line graphs and how they greatly expand our understanding of the world. Students will also learn how to plot linearly-related coordinates on a coordinate plane, connect coordinates with a line, and interpret the lines to create rules and make predictions.


At the beginning of the unit, students will be given a Field Book to take along during their journey through the Creature Capture World. The students will use these field books to define terms, play games, and log their new understandings of the line graphing.

Be prepared for an exciting game of Battle Graphs, that the students will bring home to play with a family member. They will have instructions on how to play the game (written by them!) inside their field guides.




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
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### Class Creatures

On this page you will find a zoo full of the creatures that have been created by the students! They will update their creatures pictures with info and statistics and finally their graph showing how they will get the golden sticker. Check back often, as the students find out more information about their creatures as their graphing skills grow.



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## Family Activity

The students will be tasked with writing a letter home about what they have learned in the math unit, specifically answering a) what a linear line graph is, and b) how it can be used to interpret data and make predictions. The students will then ask a family member to play their coordinate plot game with them. They will return with the scores from the games and write a paragraph about the experience.

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1. Students will be able to construct a linear line graph and make predictions about the data trends represented. (skills)
2. Students will understand that linear line graphs help us interpret data and make predictions. (concept)
3. Students will see the value in using linear line graphs to solve problems and make sense of data (depositional)
4. Students will demonstrate their understanding of ordered pairs and their relation using a linear rule. (Concept)
5. Students will know that a linear line graph is a graphic representation of related data points. (Fact)

